ARCADIS BBL
Infrastructure, environment, facilities

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Mr Samuel Borries, On-Scene Coordinator
USEPA Region 5
77 W. Jackson Blvd. (SE-5J)
Chicago, IL 60604

Subject
Contractor to Perform the Work
Plainwell Time Critical Removal Action (TCRA)
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site

INDUSTRIAL

Dear Sam:

Date
February 26, 2007

As outlined in Paragraph 11 of the 2007 Administrative Settlement Agreement and Order on Consent for Removal Action, this letter notifies the USEPA, MDEQ, and MDNR that ARCADIS of New York, Inc (formerly known as Blasland, Bouck & Lee, Inc [BBL]) is the contractor retained by the Kalamazoo River Study Group (KRSG) for the time critical removal action (TCRA). A statement of qualification is attached

The names and qualifications of the subcontractors will be forwarded shortly.

Please contact me if you have any questions

Sincerely,

ARCADIS of New York, Inc.

Stephen Garbaciak Jr , P E
Principal Engineer/Vice President

Attachment

Contact
Stephen Garbaciak Jr.

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Our ref
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Copies
Shari Kolak, United States Environmental Protection Agency
Paul Bucholtz, Michigan Department of Environmental Quality
Sharon Hanshue, Michigan Department of Natural Resources
Bonnie Allyn Barnett, Esq , Drinker Biddle & Reath LLP
Steven Cook, Esq , Lyondell/Equistar
J Michael Davis, Esq., Georgia-Pacific Corporation
Mellonie Fleming, Esq , Georgia-Pacific Corporation
Paul Montney, P.E , Georgia-Pacific Corporation
Mark Brown, Ph.D., Georgia-Pacific Corporation
Mark Tapp, Lyondell/Equistar

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Imagine the result

Administrative Settlement Agreement and Order on Consent

Plainwell Impoundment Time Critical Removal Action (TCRA)

Sediment Qualifications An Overview

February 26, 2007

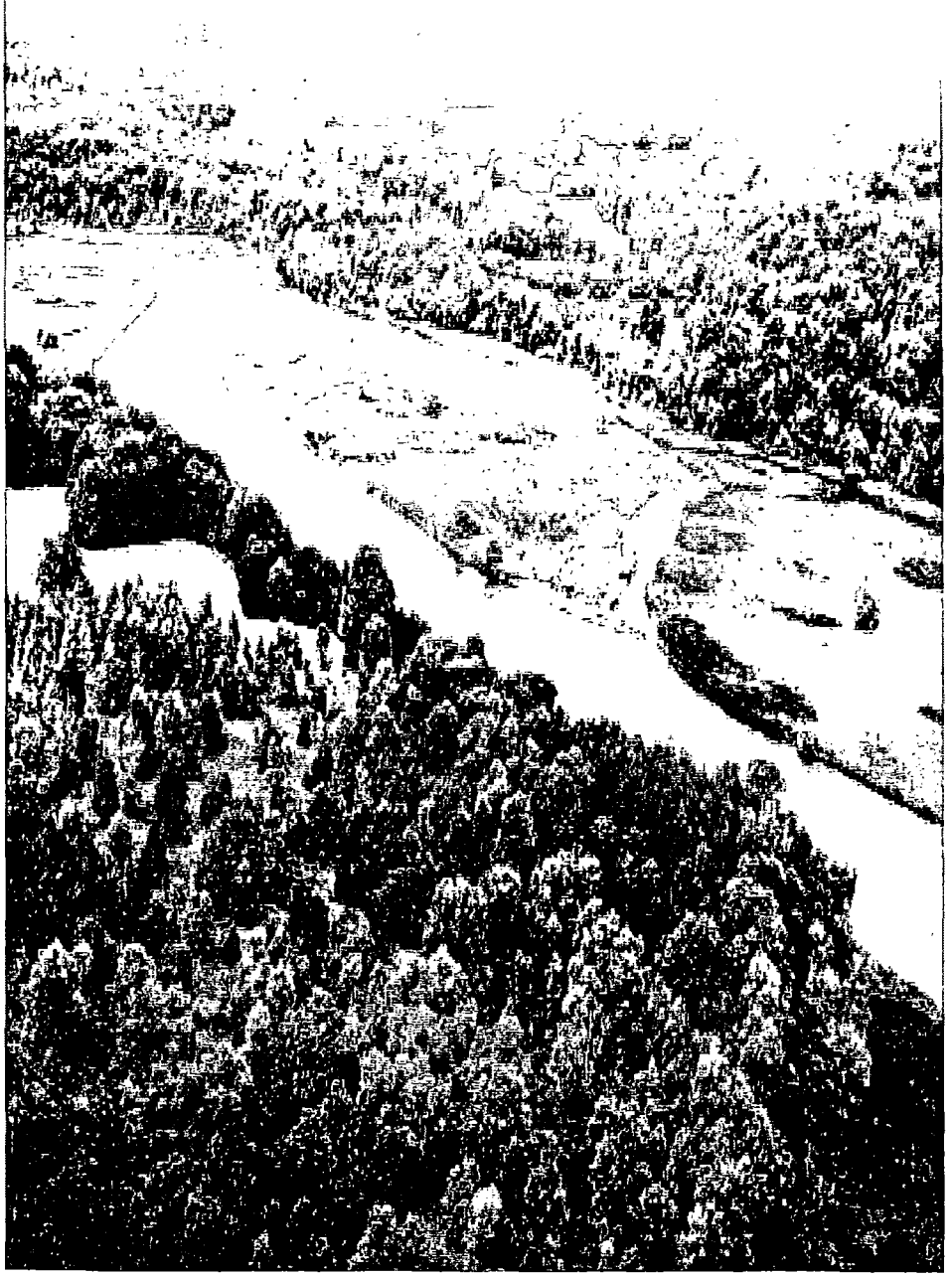


Table of Contents

Introduction

ARCADIS BBL (formerly known as Blasland, Bouck & Lee, Inc) is pleased to provide this overview of our services and qualifications related to the Administrative Settlement Agreement and Order on Consent for Removal Action associated with the Plainwell Impoundment Time Critical Removal Action (TCRA) As demonstrated below, ARCADIS BBL has the experience and practical, proven experience related to sediment management to complete this job in a safe and cost effective manner while meeting the high standard of quality that is required

Who We Are

A cornerstone of ARCADIS BBL's environmental practice is the broad range of our contaminated sediment management capabilities We are a leader in the field of sediment quality assessment and management, having directed environmental programs at more than 100 aquatic sites in the United States and abroad Whether addressing concerns involving a small creek or an entire river and harbor system, ARCADIS BBL's staff of engineers, scientists, and field specialists conduct field investigations, evaluate potential risks, assess potential remedial options, and devise effective response programs We have established a national reputation for developing and implementing comprehensive and effective assessment and mitigation strategies at sediment sites

Our unparalleled experience designing and investigating sediment remedies gives us exceptional ability to address the effectiveness, implementability and costs of sediment strategies In fact, major multinational firms rely on ARCADIS BBL for our nationally recognized sediment expertise and commitment to achieving cost-effective, common-sense solutions to their sediment concerns We provide characterization, design and remediation services for projects ranging from a few hundred to several million cubic yards Moreover, current federal guidance reflects much of ARCADIS BBL's analysis and work product in this area

What Makes Us Different – ARCADIS BBL's Value-Added Services

The Best Team – First and Always

ARCADIS BBL is fully committed to providing the most qualified and dedicated team for this project We excel at building successful project teams led by qualified and experienced project managers We adhere to a "best-team" approach in all that we do, thereby providing the most qualified project team that includes multi-disciplined ARCADIS BBL staff along with our subcontractors and vendors

We achieve our best-team commitment by integrating resources from across the firm With our full-service, in-house capabilities, we can staff the project as needed with appropriate personnel who offer specific expertise related to a given project element This approach assures that no matter what challenges may arise during this project, ARCADIS BBL will provide economical, effective and comprehensive services

Quality Matters

Our commitment to quality is integral to full compliance for all facets of this project ARCADIS BBL has established a Quality Management System through which critical-to-quality needs are defined, appropriate resources and personnel are applied, effective procedures are implemented, and processes for continuous improvement are planned, executed, evaluated, and improved as needed

Our Quality Management System (QMS) is consistent with American National Standards Institute/American Society for Quality Control (ANSI/ASQC) E-4-1994 and the USEPA's QA/R-2 requirements Information and policies identified for our QMS are contained within our Quality Management Plan (QMP) The QMP also identifies the sequence and interaction of the processes included in this system, as well as documented procedures To facilitate effective quality management, our associated processes define and communicate the necessary organizational functions and interrelations within our firm, including responsibilities and authorities for implementing, monitoring, and enforcing the QMS

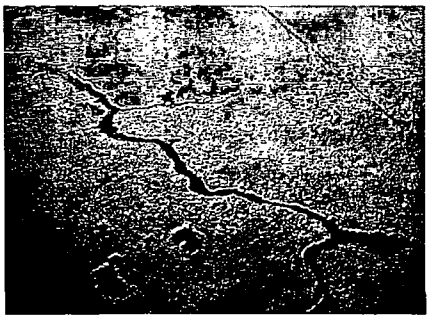
Through the implementation of the core business processes identified in our QMS, we strive to continually improve the efficiency and cost levels of these processes, while consistently maintaining a high level of effectiveness This not only has an impact on our firm's internal operating practices, but more importantly, improves our ability to meet or exceed expectations in a cost-effective and timely manner

Safety First and Foremost

One crucial aspect of compliance for this project is our commitment to project health and safety Within our industry, ARCADIS BBL has an excellent safety program and a successful safety record of which we are proud This is evidenced by our very low Occupational Safety and Health Administration (OSHA) Recordable and Lost Time Incident rates In addition, our experience modification rate (EMR) has consistently been below 1 0 These statistics put ARCADIS BBL in a select group at the top of safety performance for our industry, and we will maintain our commitment to safety throughout the duration of this project ARCADIS BBL H&S programs incorporate behavioral-based safety concepts that have been highly effective in creating a culture within our firm where our employees recognize and accept individual responsibility for workplace health and safety

The purpose of the ARCADIS BBL Safety Program is to minimize the frequency and severity of work-related injuries ARCADIS BBL's goal is to maintain a safe work environment with no work place injuries or work-related illnesses We strive every day to send our employees home in the same condition that they arrived – safe, whole and productive A site-specific Health and Safety Plan (HASP) is prepared for all projects in which chemical, biological, and physical hazards are assessed, and control measures are prescribed Our employees and our subcontractors are trained in compliance with OSHA standards, whereby all field personnel have at least 40 hours of health and safety training before being assigned to fieldwork Our supervisors have at least 8 hours of additional supervisor training, and most staff receive additional subject training on topics such as excavation safety, confined space entry, lockout/tagout, and drilling safety Each year, our employees receive an additional 8 hours of refresher training Our field employees also receive a comprehensive physical examination each year

Representative Qualifications and Experience

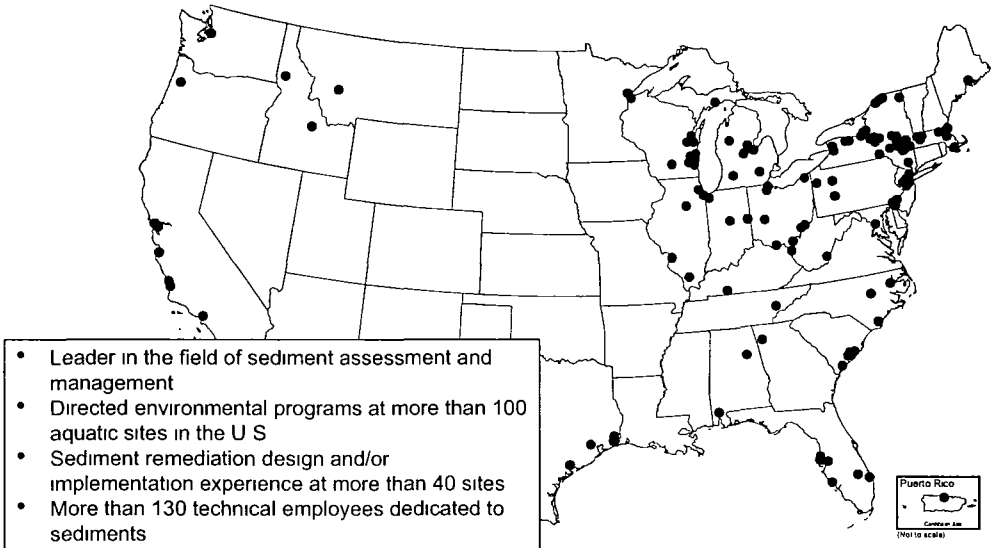


A Leader in Sediment Management

ARCADIS BBL's staff includes environmental professionals experienced in the investigation, management, and remediation of aquatic sites affected by various constituents, including PCBs, pesticides, dioxins, organic solvents, PAHs, organic metals, and other inorganics.

Our long-standing and growing work in the field of sediment management has resulted in a core staff of scientists, engineers, and technicians whose work is focused on contaminated sediment site work Their areas of specialization include ecology, ecotoxicology, natural resource economics, hydrology, geology, environmental systems analysis, environmental chemistry, analytical chemistry, and civil, chemical, and environmental engineering This core group collaborates continuously with staff possessing other technical specializations, including hydrogeology, toxicology, drafting, data management, and geotechnical, structural, mechanical, and electrical engineering

We assist clients with negotiating, performing, and managing RI/FS programs; risk assessments, and remedial programs for river and harbor systems, marinas, lakes, streams, lagoons, marinas, and other sediment sites



- Leader in the field of sediment assessment and management
- Directed environmental programs at more than 100 aquatic sites in the U S
- Sediment remediation design and/or implementation experience at more than 40 sites
- More than 130 technical employees dedicated to sediments
- Hands-on experience with sediment-related RI/FS, design, remediation, risk assessment, NRD

Planning and Performing Sediment Assessments

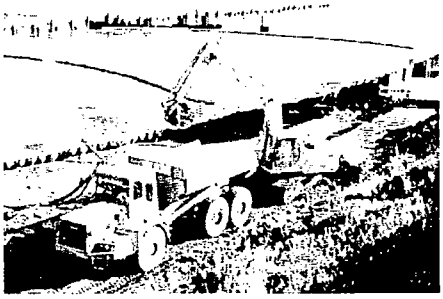
Staffed by some of the nation's foremost professionals in managing aquatic sites impacted by PCBs, PAHs, metals, dioxins, and other constituents, our team has the expertise to develop and execute comprehensive sediment, biota, and water-column investigations These investigations can involve collecting and interpreting physical, chemical, and biological parameters to support a range of goals, including regulatory needs and litigation support To promote authoritative investigations, ARCADIS BBL's in-house field services staff and aquatic specialists draw on their experience performing investigative programs at a variety of aquatic sites Similarly, our risk assessment specialists and toxicologists combine their in-depth understanding of environmental issues with practical experience conducting risk assessments to provide complete risk characterization and analysis services

A properly conducted field sampling program is critical for collecting accurate, reliable, and defensible data for any site ARCADIS BBL's field services division consists of highly qualified, appropriately trained field technicians experienced in conducting field sampling programs for all types of media from suspended and bed sediment, surface water, and floodplain soil to fish, reptiles, invertebrates, and small mammals at sediment sites

Focused on Remediation Services

At ARCADIS BBL, we realize that our clients' ability to focus on their core services and products is critical to their success Remediation issues, while important, can serve as a distraction from this critical focus Our expertise in industrial and hazardous waste services allows clients to delegate remediation projects and to concentrate on their central business issues ARCADIS BBL is an industry-leading full-service environmental consulting firm with a proven reputation for adding business value to our industrial clients' remediation programs With a top 20 ranking in ENR's list of Top Hazardous Waste Firms, ARCADIS BBL's professionals add value by developing innovative and effective solutions

Designing and Implementing Traditional and Innovative Sediment Remediation Programs



ARCADIS BBL's sediment management capabilities extend to evaluating and implementing traditional and innovative remedial technologies We conduct FSs and corrective measures studies (CMSs), perform bench- and pilot-scale treatability studies, and design and implement full-scale remedial programs involving techniques such as institutional controls, natural recovery, capping/armoring, and dredging/hot-spot removal We are a leader in designing in-place capping remedies for impacted sediments, with more than 15 years of experience working on major rivers, harbors, and waterways ARCADIS BBL's sediment team has experience with sediment evaluations and cap design at major aquatic sites around the nation, and we take pride in the

fact that we are able to develop innovative and cost-effective capping solutions that generate win-win situations for stakeholders

ARCADIS BBL's ability to complete top-quality engineering design and construction documents and our staff's hands-on remedial dredging and project management experience are the true differentiators that put us a step ahead of our competition. ARCADIS BBL has designed all aspects of numerous sediment dredging projects and has undertaken all the necessary ancillary design-related activities, including permitting issues, environmental impact statements, monitoring programs, and identification and evaluation of traditional and innovative disposal options ARCADIS BBL's staff has been directly involved with approximately one-third of all completed environmental dredging projects in the United States

Our sediment management expertise allows us to manage the entire process from strategic planning, agency negotiation, and community relations to design, construction, and long-term operation, maintenance, and monitoring (OMM), if needed In conjunction with our remedial management and construction firm, ARCADIS BBLES (formerly known as BBL Environmental Services, Inc [BBLES]), we can provide turnkey services for any remedial program

Representative Project Experience

Rather than provide our complete qualifications package, Appendix A provides a sample of recent project that directly relate to the project at hand Following the project summaries, in Appendix B, we have provided select resumes of our key staff that will support this effort Additional qualifications and resumes will gladly be provided upon request

Appendix A

Project Case Studies

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Client
Confidential

Site Size
40 miles of river and a 100 acre dewatering facility

Time Frame
1998 - present

Project Value
Confidential

Comprehensive Remedial Design Services

Large Waterway in the Northeast

Project Summary

Since the late 1990's, ARCADIS BBL has been assisting our client with efforts related to assessment, delineation, and identification of potential remediation options for a large river in the Northeast From approximately 1947 to 1977, approximately 1 3 million pounds of polychlorinated biphenyls (PCBs) were discharged from capacitor manufacturing plants into the river, which subsequently impacted the sediment

In February of 2002, the Unites States Environmental Protection Agency (USEPA) selected the preferred remedial action for this river, which calls for targeted environmental dredging of approximately 2 65 million cubic yards of PCB-contaminated sediment from a 40-mile reach of the river USEPA's remedy calls for the project to completed in two phases, with the first phase representing the first year of dredging, followed by a peer review of the Phase 1 project and any modifications made as part of Phase 2 As our client's lead engineer for remedial design of this effort, ARCADIS BBL is involved in all facets of remedial design for this program from engineering data collection and treatability studies through final design of the remedy As part of the Phase 1 remedial design, we identified recommendations for dredging- and dewatering- related activities A brief summary of these activities is provided below

Dredging Design.
USEPA issued three performance standards that form a key basis of design for the dredging and sediment processing, including standards for resuspension, dredging residuals and productivity as well as Quality of Life (QoL) standards Dredging is expected to begin in May and continue into October In order to meet dredging production standard (the basis of design is to remove 265,000 cy for the season, with 89,000 cy removed in one month), dredging is allowable 24 hours a day, six days a week, with the seventh day reserved for maintenance, make-up time for unplanned outages, or as a contingency to meet production requirements The design included an evaluation of a wide range of dredge types, with mechanical dredging (using a sealed bucket to capture contaminated sediment) identified as the preferred dredging method A dredge plan was developed during design to assess various aspects of the design, and the design plan indicates that up to seven dredges may be in operation at one time

Tugboats and barges are specified to transport the dredged material to a dewatering facility for processing prior to transport and disposal To support the fleet of vessels required for this

operation, a work support marina has been designed to provide trailers and docks for the support vessels (e g , dredge support, survey, sampling, and oversight boats)

As part of the remedial design, the dredge plan was used as a basis for modeling (performed by others) the generation and transport of sediment resuspended during dredging The results of the model were compared to the USEPA's resuspension performance standard to determine where resuspension controls may be needed To control sediment resuspension during Phase I of the dredging, a rock dike diversion, sheet piling and silt curtains were specified

After dredging, clean backfill (e g , sand, gravel), or engineered caps will be placed in most dredged areas, based on PCB levels in residual sediment Specifications require this material be transported to the site via barge or rail

USEPA QoL standards include air quality (NOx, SOx, PCBs, odor), noise control (both day and night), light control (both day and night), and navigation/recreational considerations The design included modeling of dredging operations (some modeling performed by others) to determine the need for controls or other restrictions on dredging activities, with requirements provided in the plans and specifications

Dewatering/Processing Facility

Based on a multiyear effort by USEPA to select possible locations for a sediment processing facility, a 100-acre property was finally selected and a dewatering/water treatment facility designed The design includes a waterfront unloading area, screening and desanding operations (trammel screen and hydrocyclones); staging areas; filter presses, a water treatment system [both related to dewatering and stormwater runoff]), and operations, maintenance, and monitoring The design has assumed operations will occur 24 hours a day, six days a week, with the seventh day reserved for maintenance, make-up time for unplanned outages, or as a contingency to meet the anticipated dredge production (from the dredge plan)

Dredged material will be offloaded and separated (i e , removal of large debris) and the remaining sediment will be screened in a trommel screen to remove coarse material and then transferred to two hydroclone systems for further separation The coarse material separated in the hydrocyclones will be placed on a screen to remove excess water, while the fine material will be mixed with polymers to enhance dewatering and then sent through filter presses for dewatering Twelve 600 cubic foot filter presses have been specified

Water generated during sediment processing, along with rain that falls on material handling areas will be collected for treatment The onsite treatment plant has been designed to treat approximately 2 million gallons of water per day through clarification, multimedia filtration and granular activated carbon Once treated, the clean water will be discharged and monitored for compliance with discharge requirements

After dewatering, the sediment from the screening and filter press areas will be staged in five one-acre staging areas, along with any debris offloaded at the waterfront area Two of the staging areas are covered and provided with air handling and PCB treatment capability Staged materials will be loaded into railcars for transportation to final disposal locations Approximately 38,000 feet (just over 7 miles) of rail-road track has been designed (by others) to enable loading, maneuvering, repair, and inspection of rail cars It is estimated 390,000 tons of processed-material will be transported offsite during Phase I To accommodate this volume of material, up to four trains of 81 rail cars have been designed to leave the site each week

The design included modeling of dredging operations (some modeling performed by others) to determine the need for controls or other restrictions on dredging activities, with requirements accounted for in the plans and specifications

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Client
Confidential Client

Time Frame
1992 - present

Project Value
Confidential

ARCADIS BBL Contact
Heather M VanDewalker, P E
Robert Romagnoli, P E

Sediment Management Services at a Northern NY River

Northern New York

Project Summary

Since 1992, ARCADIS BBL has been assisting a confidential client with environmental programs at a PCB-impacted river located in northern New York State Throughout these programs, ARCADIS BBL has worked closely with our client and regulatory agencies, including the USEPA, the New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and a Native American Tribe for resolution of aquatic issues at this unique site Summarized below are some highlights from our 15-year involvement in this project

Phase I of the River and Sediment Investigation

One of ARCADIS BBL's first tasks was to complete a River and Sediment Investigation (RSI) Phase I Report, which documented preliminary findings of the nature, extent, and volume of predominantly PCB-affected sediment at the Study Area Although this task presented somewhat of a challenge because the data were collected by another consultant, ARCADIS BBL was able to finalize the report within a limited timeframe

Strategy Development and Phase II of the RSI

Following completion of the RSI Phase I, a key component of our activities included developing an overall project strategy Based on the results of the RSI Phase I, and given our proposed strategy, ARCADIS BBL identified various data gaps, which provided the basis for developing Feasibility Study (FS) and RSI Phase II work plans After completing the RSI Phase II field work, which included additional sediment, water column, and biota sampling, along with sediment transport modeling, ARCADIS BBL developed the RSI Phase II Report that presented the results of the investigation activities at the river

Non-Time-Critical Removal Action (NTCRA)

An additional component of ARCADIS BBL's efforts at this aquatic site has been the development and implementation of a work plan for an NTCRA The NTCRA included dredging and removal of approximately 3,000 cubic yards of PCB-impacted sediment and boulders ARCADIS BBL provided construction quality assurance/quality control (QA/QC) oversight and conducted daily monitoring activities To complete the NTCRA monitoring program, ARCADIS BBL provided onsite technicians to conduct daily monitoring of turbidity,

TSS, and PCBs in the water column surrounding the NTCRA removal area, as well as caged fish, air, and filtrate treatment system monitoring throughout removal operations Upon completion of the NTCRA, ARCADIS BBL personnel prepared a detailed Documentation Report, which summarized dredging activities and monitoring results, as well as assessed both operational and environmental effectiveness

Supplemental Remedial Studies (SRS) Program

The SRS Program, initiated in 1995, included an expanded team of consultants and leading experts in related fields to provide a better understanding of the origin, fate, transport, and bioaccumulation of PCBs within this river system ARCADIS BBL conducted the vast majority of sample collection (several thousand samples from various environmental media, including fish tissue, water column, semi-permeable membrane devices, and sediments), and assisted in the assessment/evaluation of these data Data generated as part of the SRS Program have proven critical in understanding PCB movement in this unique aquatic system Additional data collection as part of this program continues today

Capping Pilot Study - 2001

As part of continuing efforts, ARCADIS BBL worked with the client team to successfully gain approval to conduct an in-river capping pilot study to provide additional information to be included in a revised FS Report ARCADIS BBL assisted in program development and performed monitoring of a pilot study including placement of capping materials over approximately 7 acres Three different types of cap materials (sand/topsoil mixture, AquaBlok™, and granulated bentonite) were placed alone or in combination via surface/subsurface clamshell, tremie pumping, and pneumatic broadcasting techniques An intensive monitoring program, including water column, sediment, and benthic sampling, and cap thickness measurements, was conducted by ARCADIS BBL prior to, during, and after capping activities to monitor the effects of cap placement

Feasibility Study Report

Using the data generated as part of the RSI and SRS Programs, information obtained from the NTCRA and Capping Pilot Study, and other data, ARCADIS BBL worked with the client team to orchestrate a comprehensive FS Report The FS Report included an in-depth assessment of past and current sources, remedial approaches applicable to the unique conditions of this river system, and short-term and longer-term predictions of remedial effectiveness for the comparative analysis of the various remedial approaches ARCADIS BBL successfully led the client team that completed the report for submission to the agencies under an extremely aggressive schedule

Given that additional work is on-going at the site (as described below), ARCADIS BBL will continue to work with the client team and the agencies to develop a revised FS for the site that is based on sound science and acceptable to all the stakeholders

Ice-Scour Study/Ice Management Options

In the spring of 2003, due to a significant ice jam, a loss of cap material, and in some cases underlying native sediments, was observed during routine post-placement cap monitoring in the Capping Pilot Study area As a result of these observations, ARCADIS BBL participated on a team to perform an extensive follow-up investigation to understand the cause of the changes in the Capping Pilot Study area, the mechanisms involved, and the overall impacts of the event on the distribution of PCBs in the river Activities included developing a phased field sampling plan, providing and collecting data for ice modeling and mitigation efforts, and participating in meetings and discussions with various experts in the ice engineering and geomorphology fields Work related to evaluating potential options for managing river ice continues today

Remedial Options Pilot Study - 2005

As a result of extensive discussions with the Agency stakeholders, a Remedial Options Pilot Study (ROPS) was implemented in the river in 2005 This study evaluated various dredging techniques (including debris removal) along with various types of caps (post-dredging, thin-layered, and armored) About 26,000 cubic yards of material were removed from the river and caps were placed over about 10 acres of river bottom The study was developed both in response to the ice-jam related scour event that occurred in 2003 and to address a number of uncertainties that had previously been identified in the evaluation of potential remedial options for the river ARCADIS BBL participated on a team to develop the study and was responsible for permit equivalency, access agreements, construction oversight, and performing the intensive monitoring program associated with the study The monitoring program consisted of collecting water, sediment, air, and benthic samples for analysis along with intensive river-based surveying Once the work was completed, ARCADIS BBL took the lead on developing the Documentation Report for the study Post-ROPS monitoring was performed in 2006 and will continue into 2007 The results of this study will be incorporated into a forthcoming revised FS for the site

Activated Carbon Pilot Study – 2006

Our client undertook a pilot study in 2006 to evaluate a promising new technology for the remediation of PCB-containing sediment in the river Specifically, activated carbon was applied to the upper layer of the sediment bed to evaluate its effect on PCB bioavailability in the sediment ARCADIS BBL participated as part of a client team to develop the scope, application techniques, and monitoring associated with this study Monitoring was performed

by ARCADIS BBL and consisted of water column, sediment, habitat, benthic, and in-situ bioaccumulation studies Post-carbon application monitoring is planned for 2007

Community Relations/Health and Safety

Throughout several of the studies our client has implemented, ARCADIS BBL has managed extensive community relations efforts These efforts have included. preparation of Community Update mailers, participation in and coordination of Public Availability Sessions and Citizens Advisory Panel meetings; preparation of Community Health and Safety Plans, implementation of monitoring associated with these plans, and interfacing with community members regarding property access

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Client
Confidential

Scope of Services
Environmental Assessment
Project Management
Treatability Studies
Environmental Engineering
Remedial Design
Containment Design
Hazardous Material Handling
Regulatory Compliance
Construction Oversight
Restoration

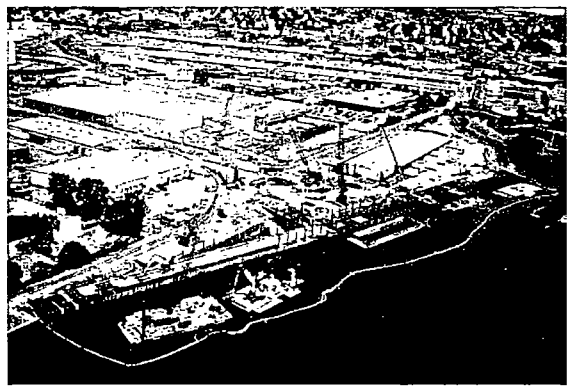
Start Date
03/2004

Completion Date
ongoing

Project Fee
$ 4 4 million to date

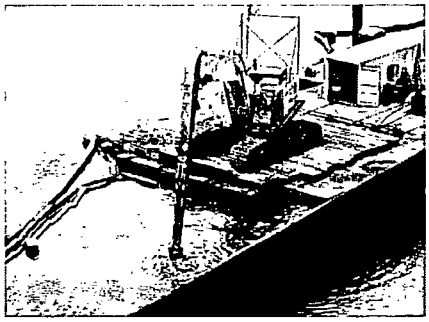
Dredging Design and Construction Oversight for a Former Coal Tar Manufacturing Facility

Everett, Massachusetts



This Boston Harbor sediment site is adjacent to a former coal-tar processing facility and includes sediments containing polycyclic aromatic hydrocarbons (PAHs) The site is regulated by the MADEP under a state cleanup program with involvement of the U S Coast Guard and other state and federal agencies, including the NOAA and the USACE

ARCADIS BBL designed and managed dredging of 60,000 cy of PAH-containing sediments and construction of a shoreline CDF that was used as a disposal cell for a majority of the dredged sediment Sediment deposits up to 30 feet thick within the footprint of the CDF were stabilized in-place (in lieu of dredging) with specialized equipment Dredge removal rates up to 2,000 cy per day were achieved on this project and for those sediments that could not fit in the CDF (the CDF was designed with a 40,000 cy storage capacity), were processed and disposed in an off-site landfill using a combination of rail and truck transport Construction of the CDF, stabilization of in-situ sediment, dredging, transportation and off-site disposal of sediment, and placing a sand cap over the dredge-area were completed within an 8-month period The CDF was also designed as a docking facility to support local marine transport operations and included provisions for rerouting a network of storm drains



Construction oversight and engineering during this design-build project included implementation and management of a real-time water quality and air monitoring programs as well as daily noise and vibration monitoring Daily quality control measures included review of cost and progress reports, working through technical issues as they occurred and assessing the contractor's adherence to the contract plans and specifications Technical challenges during construction included

- Dredging on a 24 hour/day basis to meet the project schedule
- A fish spawning window that prevented dredging during 4 months of the project
- 10 foot tidal changes

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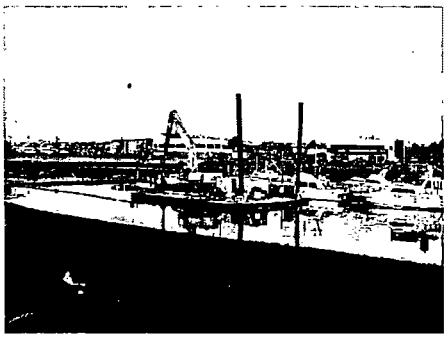
Dredging Design and Oversight



- Dredging in an active federal channel used by local maritime industries and a local marina
- The use of silt curtains and oil booms, mandated by permits
- Potential air, noise and vibration impacts to local residents, including an elderly housing complex and area schools
- Working on property owned by others

The design and permitting processes were streamlined through a number of investigations, including a geotechnical assessment of the sediment and adjoining shoreline for stability, mapping of the sediments targeted for dredging using multi-beam hydrographic surveys, remotely operated cameras to investigate unmapped subsurface drainlines and the collection of pre-construction water quality, sound and air data to document ambient conditions A pilot scale dredging study for 700 cy of sediment was also implemented as part of project's design and was used to streamline the permitting process and avoid the need to prepare an Environmental Impact Report (EIR) Other project design elements included an upland subsurface barrier to prevent NAPL from migrating to the river and a wetland mitigation project to offset the 1 9 acres of Boston Harbor that were filled to construct the CDF ARCADIS BBL also played an active role in community outreach activities including periodic briefings for federal, state and local officials

ARCADIS BBL expedited the permitting process for filling 1 9 acres of Boston Harbor to construct the CDF All federal, state and local permits were received within 15 months of filing the initial applications

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Client
Rockwell Automation Inc

Client Contact
Ulrike Williams

Scope of Services
Environmental Assessment
Project Management
Environmental Engineering
Remedial Design
Containment Design
Hazardous Material Handling
Regulatory Compliance
Construction Oversight
Restoration

Completion Date
2001

Project Fee
Confidential

Sediment Remediation and Restoration
Russellville, Kentucky

ARCADIS BBL and ARCADIS BBLES, our affiliated remedial construction company, completed the design and remediation of an extensive sediment, bank soil, and floodplain removal project in a 3 5-mile reach of Town Branch, a creek in southwestern Kentucky The creek was contaminated with PCBs, chromium, and cyanide from an aluminum die-casting facility

Our project-specific activities included permitting applications, preparing remedial design documents, negotiating with the state, assisting legal counsel with obtaining access to third-party properties and community relations

The project involved the removal, handling, dewatering, loading, transport, and disposal of more than 239,000 cy of sediment and soil The removal was performed "in the dry," progressed from upstream to downstream and involved isolating sections of the creek (about 1,000-foot increments) with an upstream and downstream dam, diverting creekflow via pumping through a temporary bypass pipe, removing sediment (after the creek water was pumped out), bank, floodplain soils, performing verification sampling, backfilling and restoring the area Sediment was removed with an articulated bucket and staged to allow gravity dewatering before loadout Due to the irregular bedrock bottom of the creekbed, powerwashing of the bedrock was employed to remove all sediment to the maximum extent practicable All water was transported and treated at the temporary water treatment facility (equalization/settling, sand filtration, GAC)

Plans and specifications were developed for review by the primary regulatory agency, the Kentucky Department for Environmental Protection (KDEP), for solicitation of competitive bids; and for permit applications A detailed Habitat Restoration Plan was developed for the creek bed, creek banks, and floodplain areas

Habitat and aesthetic restoration was a critical aspect of the project In urban areas, the stream channel was restored primarily with rip rap for flow conveyance and protection of structures in the already channelized stream In rural areas, the design included various types of in-stream habitat enhancement structures, bank cover vegetation, and riparian zone plantings At the time, the Town Branch Creek restoration project was the largest of its kind in the state of Kentucky

ARCADIS BBL
Infrastructure, environment, facilities

Client
General Motors

Client Contact
Jim Hartnet

Scope of Services
Environmental Assessment
Project Management
Treatability Studies
Environmental Engineering
Remedial Design
Containment Design
Hazardous Material Handling
Regulatory Compliance
Construction Oversight
Restoration

Start Date
1992

Completion Date
2005

Project Fee
$ 2 million

Dredging Design and Remedial Construction Oversight
Massena, New York

ARCADIS BBL and ARCADIS BBLES performed design and remedial construction oversight services for the dredging of the St Lawrence River Sediment Removal Project in conformance with a Record of Decision (ROD) issued by the USEPA The work called for the removal of PCB-containing sediments in an approximate 10-acre embayment area that extended 250 feet out into the river before dropping off to a 40-foot-deep channel that defines the southern edge of the St Lawrence River shipping channel Main channel flows exceeding 300,000 cubic feet per second, a nearby channel lock, and Great Lakes shipping vessel traffic had an impact on the embayment area causing shifting currents, back eddies and wave actions To contain activities and prevent releases during dredging, a 2,200-lineal-foot sheetpile wall with supporting king piles was installed, isolating the sediment removal area

ARCADIS BBL/ARCADIS BBLES designed and implemented a plan for collection of additional site data and evaluated sediment removal alternatives for both practicality and cost The evaluation considered water-based hydraulic and mechanical dredging options and containment systems, land-based sediment handling and water treatment systems, sediment disposal criteria, nearshore mechanical dredging in dry conditions and environmental monitoring requirements

Approximately 13,000 cy of sediment were removed by hydraulic dredging with limited mechanical dredging from a barge to remove rock and debris obstructions A nearshore barrier system was installed where draft prevented hydraulic dredging, and these sediments were removed mechanically "in the dry "

Hydraulically dredged sediments were pumped through a shaker screen and then to an equalization basin for primary settling High moisture content sediments consisting of fine-grained material were further dewatered using a recessed-chamber filter press to meet paint filter test criteria for landfilling

ARCADIS BBL
Infrastructure, environment, facilities

Client
Confidential

Scope of Services
Remedial Design
Remedial Implementation
Sediment Excavation
Project Management
Construction Oversight
Regulatory Compliance
Restoration

Start Date
1997

Completion Date
1998

Project Fee
Approximately $3 M

Development and Implementation of Sediment Remedial Action
Toledo, Ohio

ARCADIS BBLES negotiated, developed and implemented a cost-effective remedial approach on behalf of our client at the Unnamed Tributary site, a former oxbow of the Ottawa River Sediments and marsh soils adjacent to the Unnamed Tributary were contaminated with PCBs from a number of potential locations, including discharge from storm sewers and nearby landfills Following ARCADIS BBL's completion of a RI/FS, ARCADIS BBL/BBLES were retained to develop and implement the selected remedy, which consisted of excavation, transport, and disposal of sediment and marsh soils, followed by site restoration to wetland conditions

ARCADIS BBL developed plans and specifications that established the goals and objectives of the remediation, the general requirements for remedial execution/completion, and the schedule expectations We also obtained the necessary access agreements and permits for remedial implementation Key design aspects included·

- Large earthen berms were constructed and placed around sediment excavation areas to allow site dewatering and prevent flooding due to high river/seiche events The use of onsite borrow material resulted in significant cost savings to the client

- Several large storm sewer pipes (up to 94-inch) were temporarily rerouted These activities were staged in phases with sediment excavation activities

- Sediment excavation was conducted by first sheetpiling a manageable reach of the Unnamed Tributary and dewatering the contained reaches Standing water was discharged to the river, and residual water was routed to an on-site water treatment system

- In total, 8,039 cy of sediment and 1,653 cy of soil were excavated "in the dry," segregated, stabilized in a pug mill, and trucked off site for disposal

- Restoration was performed following completion of the sediment/soil excavation activities The site was backfilled (using on-site borrowed materials), graded and shaped, and topsoil was placed and hydroseeded with a wetland seed mix to construct a site wetland

ARCADIS BBL
Infrastructure, environment, facilities

Dredging and Subaqueous Capping of Sediments
Bayou in Texas

Client
Confidential

Scope of Services
Environmental Assessment
Project Management
Treatability Studies
Environmental Engineering
Remedial Design
Containment Design
Hazardous Material Handling
Regulatory Compliance
Construction Oversight
Restoration

Start Date
1992

Completion Date
2005

Project Fee
$ 2 million

This bayou is located adjacent to a former wood treating facility near Beaumont, Texas Over a period of time operations at the facility impacted sediments in the bayou

ARCADIS BBL was retained based on our specialized experience related to addressing sediments in marsh terrain, inland waterways and shallow coastal environments ARCADIS BBL participated in two elements for this project:

- One of a team of engineers selected to provide strategic consulting
- Lead design and engineering services for engineering investigations, studies and design preparation

From a strategic perspective, ARCADIS BBL identified dredging and subaqueous capping as two potential methods to remove or isolate potentially impacted bayou sediments To further evaluate the two methods and to develop a Basis of Design ARCADIS BBL conducted the following

- Hydrographic surveying of sediments
- Geotechnical sampling of sediments
- Benethic community sampling
- Sediment consolidation testing for evaluation of capping options

Following the development of a Basis of Design, ARCADIS BBL will be responsible for preparing design memoranda, design analysis, construction drawings and specifications, constructability reviews and other design related documents In addition, ARCADIS BBL will perform construction management; including reviewing shop drawings and other submittals, site visits, preparing and reviewing change orders and performing quality control testing

Appendix B

Select Resumes

Education
MS/Environmental Engineering, University of Illinois at Urbana-Champaign, 1988
BS/Civil Engineering University of Illinois at Urbana-Champaign 1986

Years of Experience
With ARCADIS Since 1999

Professional Registrations
Professional Engineer IL
Professional Engineer MI
Professional Engineer WI
Professional Engineer NY

Professional Qualifications
Western Dredging Association
Editorial Board Western Dredging Association's Journal of Dredging Engineering
American Society of Civil Engineers

Stephen Garbaciak Jr., PE

Vice President

Mr Garbaciak has more than 19 years of experience and his responsibilities include determining the physical characteristics of sediments and waterways, assessing remedial options, and evaluating the applicability of innovative hazardous waste technologies to sediment remediation Formerly a project manager of U S Environmental Protection Agency's (USEPA's) sediment technology demonstrations under its Assessment and Remediation of Contaminated Sediments (ARCS) program, he coordinated the efforts of multiple federal and state agencies to execute five onsite, pilot-scale technology demonstrations for the remediation of contaminated sediments He also served as Chief of the Environmental Engineering Section for the Chicago District of the U S Army Corps of Engineers (ACOE), through which he developed valuable relationships with key personnel in the policy and research programs of the Corps

Experience

Dredging Project Design
Confidential Client, Northeastern United States
Ongoing, Project Cost $15,000,000
Serves as design project manager for development of dredging, dredged material transport, rehandling, dewatering, water treatment, rail yard construction and operation, and back fill and capping operation design at this project site The largest sediment remediation project designed to date, was responsible for the coordination of the activities of a design team of 75 individuals across 15 ARCADIS BBL offices plus a supporting team of subcontractors Responsible for budget tracking and client communications on schedule and budget

Contaminated Sediment Removal Design
Confidential Client, Midwestern United States
Ongoing, Project Cost· $3,700,000
Served as program director for ARCADIS BBL's efforts to develop a design for the removal of 100,000 cy of sediment from this confidential river and creek system Alternatives involving wet excavation, stream bypass for dry excavation, and dredging have been developed to compare differences in cost, schedule, and implementability Extensive site restoration following remediation will also be necessary due to the sensitive nature of the surrounding ecosystem Project is currently being implemented by ARCADIS BBLES

Remedial Investigation, Ecological Risk Assessment, Human Health Risk Assessment
Confidential Client, DePue, Illinois
Ongoing, Project Cost $1,700,000
ARCADIS BBL is implementing an RI, ERA, and HHRA at two operable units of the New Jersey Zinc/Mobil Chemical Superfund site, a former zinc smelter, fertilizer factory, and paint pigment manufacturer The former industrial facilities have been demolished and remedial options for sediments and soils remaining on-site are being considered The adjoining DePue Lake and the off-site areas of the site are the two OUs being addressed by ARCADIS BBL Constituents of concern include arsenic, cadmium, copper, lead, and zinc Served as ARCADIS BBL's project coordinator for the development of the work plans and continuing activities implementing the plans

Time-Critical Removal Action and Feasibility Study
Kalamazoo River Study Group, Kalamazoo, Michigan
Ongoing, Project Cost $40,000,000
The Allied Paper, Inc /Portage Creek/Kalamazoo River Superfund site contains more than 50 miles of PCB-impacted river sediments and floodplain soils Served as project manager responsible for the development of the October 2000 FS for the site The draft FS evaluated a wide variety of remedial options for sediments and soils ranging from no action, natural attenuation, capping, large-scale dredging, and excavation of sediment

Design project manager for the TCRA to be conducted in 2007 on the Former Plainwell Impoundment The TCRA will include the removal of 132,000 cubic yards of sediments, bank soils, and floodplain soils, the removal of the Former Plainwell Dam, and revegetation of the disturbed bank areas

Sediment Remediation Technical Assistance and Support
Fox River Group, Green Bay, Wisconsin
2004, Project Cost $10,000,000
Provided technical assistance and support on a wide variety of sediment remediation issues being addressed by the full PRP group, including detailed review and comment on RI/FS reports prepared by the Wisconsin Department of Natural Resources and the USEPA Prepared formal comment submissions on the Proposed Remedial Action Plan (PRAP) and Record of Decision (ROD)

Bayou Restoration Design
Motiva Enterprises, Norco, Louisiana
2002, Project Cost $162,000
Bayou Trepagnier is a 3-mile long shallow waterbody in Louisiana that had been the primary receiving stream for discharges from the Norco Refinery over the past 75 years Efforts were underway to address issues associated with heavy metals, PAHs, and oils present in the sediments of the bayou, and to address intrusion of brackish water from nearby Lake Pontchartrain Served as project manager for ARCADIS BBL's efforts to develop a design for the removal of sediments from selected portions of the bayou, the filling and closure of upstream areas of the bayou, and the construction of new channels and diversion structures that will introduce supplemental freshwater flow to the surrounding wetland/marsh system

Remedial Design Technical Assistance and Support
ISK Corporation, Duluth, Minnesota
2001, Project Cost $20,000
River and bay sediments at the St Louis River/Interlake/Duluth Tar site are impacted by PAHs and coal-tar residuals Because of strong local knowledge and history of successful negotiations with regional regulatory authorities, provided technical assistance and support to the prime consultant in its development of negotiating strategies and coordination with regulatory agencies including the Minnesota Pollution Control Agency and the USACE Helped assemble peer review team that led to agency acceptance of client-preferred remedial alternative combining capping, dredging, and natural recovery components

Comprehensive Sediment Delineation Plan and Site Strategy
GB Biosciences, Houston, Texas
2001, Project Cost $304,000
Greens Bayou is a tributary to the Houston Shipping Channel, and is a navigable waterway with both deep-draft and barge channels Past discharges to the bayou and an adjacent drainage ditch have resulted in the detection of elevated levels of DDT compounds and other constituents, interrupting maintenance dredging by the USACE Served as project manager responsible for the development of a comprehensive sediment delineation plan, site strategy, and expedited sediment retention measures report

Development and Implementation of Dredging and Disposal Plan
Ashtabula River Cooperation Group, Ashtabula, Ohio
2000, Project Cost $1,300,000
The Ashtabula River Partnership, with membership from federal, state, and local regulatory agencies, local business interests, concerned citizens, and industrial parties, was working toward the development and implementation of a dredging and disposal plan for PCB-impacted

sediments in the Ashtabula River and Harbor The project was executed under unique environmental dredging-based cost-sharing authorities available to the USACE by the Water Resources Development Act Helped develop technical reports on aspects of the project including precision dredging methods, dredged material volume minimization techniques, and dewatering methodologies

CDF Evaluation, Design, and Permitting
River Terminal Development Corporation, South Kearney, New Jersey, 1999
Provided technical assistance for the evaluation, design, and permitting of two nearshore CDFs on the Hackensack River The facilities will contain 250,000 cy of dredged material from navigation projects in the Port of New Jersey and will also serve to demonstrate the efficacy of nearshore CDFs Reviewed the collection of sediment, water, and biological samples, the preparation of state and federal permit applications, and engineering aspects of design and construction for the facilities

Natural Resource Damage Assessment Technical Support
PRP Group, East Chicago/Gary/Hammond, Indiana, 1999
Served as project manager for efforts in support of a multiple-client group of PRPs named in an NRD claim for this industrial waterway The Grand Calumet River and Indiana Harbor Ship Canal have been impacted by more than a century of industrial and municipal development, including the location of several of the world's largest refineries and integrated steel mills Assisted the client group and its consultants in the collection and evaluation of existing data related to the NRD claims, the development of technical meetings with the resource Trustees, and the evaluation of sediment remediation and restoration options for the system

Development and Evaluation of Remediation and Restoration Options
Fort James Corporation, Green Bay, Wisconsin, 1999
Served as project manager for efforts to develop and evaluate remediation and restoration options for the Fox River, a major PCB-contaminated river system in the Great Lakes region Responsible for developing remediation options that ranged from natural recovery to dredging and disposal, employing the selected options to execute staged, sequential risk mitigation on the river system, and identifying possible sites for the disposal of contaminated sediments

Technical Assistance
Roy F Weston, Inc , Western Massachusetts, 1999
Provided client support to the USACE and the USEPA as they evaluate alternatives for the mitigation of human health and ecological risks posed by PCBs and other hazardous substances in river sediments and bank and floodplain soils at this site, formerly the world's largest transformer manufacturing plant As an advisory board member, helped to ensure that data

collection, interpretation, and validation and the development of remedial options were technically sound and defensible In this capacity, reviewed reports, participated in planning discussions, and attended regular advisory meetings

Development of Regional Dredged Material Processing Facility
NUI Environmental, Elizabeth, New Jersey, 1999
Project manager for the development of the facility that will accept materials from navigation projects in the New York/New Jersey Harbor area and prepare them for disposal at off-site locations The facility will employ dewatering, particle separation, and stabilization/solidification techniques to render the dredged materials suitable for disposal Responsible for evaluating potential sediment processing techniques and coordinating with state and federal regulatory agencies

Confined Disposal Facility Design
PRP Group, Island End River, Massachusetts, 1999
This site near a former manufactured gas plant, coking operation, and coal-tar processing facility contains sediments that are contaminated with PAHs The site is regulated under a Massachusetts state cleanup program, with involvement of the U S Coast Guard Provided technical assistance to the PRPs as they evaluated the feasibility of reconfiguring a proposed CDF and assessed possible changes in the CDF design for technical feasibility, ease of implementation, and cost

Newburgh Lake Restoration
ECT, Inc , Livonia, Michigan, 1998
Served as project manager for design review efforts to restore the 105-acre impoundment Restoration included rehabilitation of the dam that creates the impoundment, dewatering of the lake, and subsequent removal of 600,000 cubic yards of sediments, some of which were contaminated with up to 50 ppm of PCBs Participated in an engineering review of the plans and specifications for the project to ensure that those documents and project activities represented the state-of-the-art for sediment remediation

Expert Witness Testimony
Confidential Client, Northwestern United States, 1996
Acted as an expert witness in support of a client's claims against an insurer Applied experience and understanding of the complete spectrum of sediment remediation projects in the United States and throughout the world, and demonstrated the appropriateness and effectiveness of the remedial alternative implemented by the client

ARCADIS BBL

Education
BS/Construction Management with Minor in Management, SUNY College of Environmental Science and Forestry/Syracuse University, 2006
AAS/Mechanical Technology, State University of New York at Morrisville, 1988

Years of Experience
With ARCADIS Since 1993

Gerald P. Cummins

Senior Project Scientist I

Mr Cummins has more than 18 years of project experience in project management, preliminary and final remedial designs, remedial action implementation/remedial construction, environmental assessments, cost estimating, hazardous waste management, and underground and aboveground storage tank project design

Mr Cummins' background includes developing and evaluating remedial alternatives, and the preliminary and final design of selected alternatives for the management of hazardous materials He has also performed cost estimating for various projects, conducted environmental assessments of potential hazardous waste sites, and prepared reports to document the results of investigation and remedial activities Mr Cummins has experience with regulatory programs including RCRA corrective action, CERCLA remedial investigations and feasibility studies, and other federal and state consent decree implementation In addition, Mr Cummins has extensive experience with the regulatory and technical aspects of former manufactured gas plant (MGP) site remedial design and remedial action implementation He also is experienced with underground and aboveground petroleum/chemical storage systems, including system evaluations, tank and pipeline leak detection, inventory monitoring program development, and removal and replacement design

Experience

Remedial Design and Construction Program
Project Client. National Grid, *Project Location* Oneida, New York
Completion Date 2006, *Project Cost* $800,000
Project manager for a remedial design and construction program Developed contract documents (10 technical drawings and technical specifications) for agency review Remedial design provided for the excavation and offsite treatment of 5,000 cubic yards of MGP-impacted soils Additional work efforts included the development of a remedial design work plan and detailed construction cost estimate, and addressing agency comments/responses Project management activities included the development of scopes of services, budget tracking and invoices, project staffing, communications with clients and agencies, the development of a construction certification report, and the coordination and performance of long-term monitoring

Additional activities included managing kick-off meeting, shop drawing review, development of project modifications, and construction oversight activities Responsibilities also included conducting and documenting weekly construction project status meetings with the contractor, client, and regulatory agency, as well as contractor payment review and recommendation, and contractor construction closeout

Remedial Design Program
Project Client National Grid, *Project Location* Oneida, New York
Completion Date Ongoing, *Project Cost* Estimated $20 Million
Project manager at a former MGP site Remedial design included provisions for the excavation and onsite thermal treatment of more than 60,000 cubic yards of MGP-impacted soil (portions will be excavated from within a temporary structure with air handling equipment) and/or sediment, a temporary water treatment system, and restoration of property and a drainage channel impacted as a result of excavation activities Design duties included development of contract documents (30 drawings and specifications), and project management activities included the development of scope of services, budget tracking and invoices, project staffing, and communications with clients and agencies

Remedial Design and Construction Program
Project Client National Grid, *Project Location* Saratoga Springs, New York
Completion Date 2002, *Project Cost* $16 Million
Project manager at a former MGP site Developed biddable contract documents (50 drawings, specifications, basis of design), wetlands mitigation plan, confirmatory sampling plan, long-term monitoring plan, construction quality assurance/quality control (QA/QC) plan, and a health and safety plan (HASP) Remedial construction efforts included the installation of a water-tight steel sheeting barrier wall to hydraulically isolate a 7-acre property contaminated with MGP constituents, the construction of a groundwater treatment system, excavation (portions of which were excavated from within a temporary excavation enclosure with air handling equipment), and off-site thermal treatment of MGP-impacted soils and sediments (excavated from a 1-mile-long length of stream) Additional construction activities included the relocation of a structure (former brick holder) with historical significance, the demolition of a one-story building, a stormwater management system, and a 7-acre asphaltic cap Project management activities included the development of scope of services, budget tracking and invoices, project staffing, the development of a closeout report, and the management of long-term monitoring efforts associated with the restored wetlands Also, performed shop drawing review, the development of project modifications, and contractor payment review, contractor closeout

Remedial Investigation and Design Program
Project Client National Grid, *Project Location* Saratoga Springs, New York
Completion Date Ongoing, *Project Cost* Estimated $1 Million
As project manager, developed and completed a site investigation program to delineate MGP-impacted subsurface soils within an approximate ½-acre parcel located adjacent to a former MGP site Investigation results were then utilized to facilitate the development of a draft feasibility study report to identify an appropriate site remedy Developed contract drawings (12 technical drawings and technical specifications) and associated plans (Waste Material Handling and Disposal Plan, Community Air Monitoring Plan) for USEPA review and subsequent approval Remedial design included provisions for the installation of a subsurface barrier wall system, groundwater recovery, and final cover system Project management activities included the development of scopes of services, budget tracking, invoicing, project staffing, communications with clients and agencies, and project coordination meetings

Remedial Design and Construction Program
Project Client National Grid, *Project Location* Rome, New York
Completion Date Ongoing, *Project Cost* Estimated $16 Million
Project manager for a remedial design and construction program Developed contract documents (51 technical drawings and technical specifications) as well as several ancillary documents including Basis of Design, Waste Handling and Disposal Plan, Construction Quality Assurance Project Plan, Community Air Monitoring Plan, and HASP for agency review The remedial design program was broken into three construction phases and includes a 1,200 linear foot water-tight steel sheeting barrier wall to prevent off-site migration of MGP impacted groundwater and NAPL, a 14-acre engineered surface cover system, groundwater treatment system, material excavation (approximately 27,000 cubic yards, portions of which will be excavated from within a temporary enclosure with air handling equipment and with excavation depths of up the approximately 27 feet below ground surface), sediment removal, wetland restoration, and off-site thermal treatment of MGP-impacted materials

Remedial Design Program
Project Client Central Hudson Gas and Electric, *Project Location* Poughkeepsie, New York
Task manager at a former MGP site Developed draft contract documents (remedial design work plan, 10 contract drawings, and specifications) for agency review Remedial design included provisions for the excavation (within a temporary enclosure) and off-site treatment of 5,000 cubic yards of MGP-impacted soil, a temporary water treatment system, and restoration of property impacted as a result of excavation activities

Remedial Design Program
Confidential Client, Project Location Ayer, Massachusetts
Completion Date Ongoing, *Project Cost* $1 Million
Task manager at a former chemical formulating facility Developed draft contract documents (design drawings and technical specifications) as part of a Phase IV remedy implementation plan for MADEP review Remedial design includes provisions for the stabilization/solidification of impacted subsurface materials to depths of approximately 20 feet below ground surface within an approximately 16,000-square-foot area, the excavation and off-site disposal of approximately 400 cubic yards of impacted materials and the installation of a low-permeability engineering barrier (soil cover system), and restoration of property impacted as a result of site remediation efforts

Sediment Removal Monitoring Plan
Project Client General Motors Corporation, *Project Location* Massena, New York
Developed a monitoring plan to document sampling objectives, locations, frequency, and field procedures for monitoring the removal of PCB-impacted sediments from within the St Lawrence River The plan identified monitoring requirements relative to three distinct activities of the sediment removal operations that included pre-construction, construction, and post-construction monitoring The development of monitoring requirements included evaluating water-column sampling techniques to develop sampling procedures and locations; evaluating sediment sampling techniques and identifying a technique applicable to site conditions, evaluating aquatic survey techniques and identifying a technique that would provide adequate information to calculate sediments removed during dredging activities, and identifying procedures to facilitate the calculation of a "water-column response level" to confirm that water-quality criteria were not exceeded

Verification of Soil Cleanup Activities
Project Client Transcontinental Pipeline Corporation, *Project Location* Pennsylvania
Developed soil remediation verification reports associated with the documentation of cleanup activities at two natural gas compressor stations These reports were developed to document the activities performed as part of the cleanup of soils impacted by PCBs, organic compounds (specifically certain base neutral extractables), and inorganic compounds

RCRA Corrective Action Activities
Project Client General Motors Corporation, *Project Location* Flint, Michigan
Task manager for environmental activities performed at a 450-acre automobile manufacturing facility under a RCRA consent decree for corrective action The site contains more than 10 million square feet of manufacturing buildings Task management activities include assisting with negotiating and developing a "short order" RCRA consent decree, developing description of current conditions reports, developing and implementing subsurface investigation activities, and developing interim measures (predominantly free-product recovery systems)

Predesign Work Activities and Coordination Efforts
Project Client PRP Group, *Project Location* Massachusetts
Participated in predesign work activities and coordination efforts at the 11-acre Superfund site, which contained buried wastes in former quarry pits that were 150-feet deep Predesign included groundwater monitoring, recovery well installations, soil and sediment bench/pilot solidification studies, cap design modeling, stream diversion/lining and stormwater management evaluations, remedial action sequencing, and soil characterization Evaluated data acquired during these activities to calculate soil quantities that would require excavation and solidification

Develop Health and Safety Plan
Project Client General Motors Corporation, *Project Location* Flint, Michigan
Developed a health and safety plan that identified minimum health and safety procedures, methods, and requirements to be implemented during the performance of field investigation activities at the automobile manufacturing facility site Developed the plan in accordance with applicable health and safety standards as defined by the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupation Safety and Health (NIOSH)

Groundwater Remediation System Design
Project Client PRP Group, *Project Location* New Jersey
Participated in the design of a 400-gpm groundwater treatment system for the removal of volatile organic compounds (VOCs) at a New Jersey Superfund Site A complex treatment system was required due to the presence of a wide variety of VOCs, high iron and biological oxygen demand (BOD) concentrations, and very stringent effluent criteria The groundwater remediation system included groundwater extraction wells, an influent holding tank, a metals removal system, a biological treatment system, air strippers, carbon adsorption units, effluent storage tanks, a sludge conditioning and dewatering system, and reinjection wells

Groundwater Remediation System Design
Project Client USACE, *Project Location* Watertown, New York
Participated in the development of design plans and specifications for the remediation system that was designed to be expandable from a capacity of 25 to 50 gallons per minute (gpm) This system included two groundwater recovery wells, a product recovery system, groundwater depression pumps, an oil/water separator, an air stripping system, and granular-activated carbon units The system was designed to ultimately discharge to a municipal sewer system Upon completion, the system was successful in removing 3,000 gallons of free-floating product during the first month of operation

Development of Work Plan for Industrial Decontamination
Project Client General Motors Corporation, *Project Location* Massena, New York
Developed a work plan for the cleanup of various pieces of industrial machinery impacted by PCBs, including constructing a decontamination structure, decontamination guidelines for the

cleanup of the machinery, disposal requirements for PCB-impacted soils and washwaters, and the ultimate disposal of equipment

Feasibility Study Development
Project Client Revlon Corporation, *Project Location* New Jersey
Developed a feasibility study evaluating local, state, and federal regulations regarding the installation of an AST farm containing hazardous and flammable substances Based on the results of the FS, developed conceptual design drawings for installing seven ASTs and submitted the design to the appropriate regulatory agencies for approval

NPDES/SPDES Permit Applications
Project Client Bristol Meyers Squibb Company, *Project Location* Syracuse, New York
Completed the applications at this 60-acre manufacturing facility Additional work efforts performed at this facility included evaluating the facility's storm sewer and sanitary sewer systems consisting of 10 outfalls having contributing pipelines ranging from 10- to 60-inches in diameter with a total length of approximately 20,000 feet Work efforts associated with the evaluations included managing visual inspection activities, developing accurate storm and sanitary sewer site plans, video inspection of storm and sanitary sewer systems, developing a storm sewer sampling/analysis program, stormwater contaminant source identification and control work plan, developing a best management practices plan, and analyzing storm sewer system repair alternatives

Develop Design Plans and Specifications
Project Client Chrysler Corporation, *Project Location* Ohio
Developed design plans and specifications for the removal of eight USTs located at three separate facilities, the installation of two 10,000-gallon UST systems, and the installation of one 500-gallon AST system The UST systems included double-walled USTs, double-walled fiberglass piping, fuel dispensers, fuel management system, level gauge, leak detection system, and a canopy with fire suppression system The AST system included a steel diked secondary containment system, level gauge, and overfill detection alarm system

Field Reconnaissance of Hazardous Waste Inventory Information
Project Client General Motors Corporation, *Project Location* Massena, New York
Participated in the field reconnaissance of hazardous waste inventory information ultimately used to develop a cost-effective hazardous waste management program The program included the closure of an AST and drum storage area as mandated under RCRA

Excavation of Soils Impacted by Organic Constituents
Project Client Georgia Pacific Corporation, *Project Location* Northern New York
Provided oversight for the excavation of impacted soils at a former paper mill site The soils were excavated for treatment via placement upon a biological treatment unit Oversight duties

included evaluating existing subsurface data to identify areas of potential contamination, supervising the installation of test pits used to confirm the presence of organic contaminants, supervising soil excavation activities, screening excavated soils using field screening techniques, calculating and documenting excavated soil quantities placed upon the biological treatment unit; and developing site maps that document the locations of excavated soils

Phase I and Phase II Environmental Site Assessment
Project Client General Motors Corporation, *Project Location* Flint, Michigan
At a major automobile manufacturer, performed a Phase I and Phase II Environmental Site Assessment (ESA) to facilitate the transfer of property to a third party The ESA involved performing ASTM-compliant Phase I and Phase II site assessments for a 30-acre parcel Phase I ESA activities involved reviewing available site records including environmental files and architectural/engineering drawings, interviewing site personnel; reviewing historical site information, including Sanborn mapping, aerial photographs, and historical mapping, and developing potential areas of concern (PAOCs) As a result of identifying PAOCs within the 30-acre parcel, developed and completed a Phase II ESA that included developing and performing a geophysical survey and installing several soil borings to investigate potential subsurface impacts resulting from historical gasoline filling stations with underground storage tanks The results of the Phase I and II ESA led to the successful transfer of property to a third party

Soil and UST Remedial Activities
Project Client Penske Trucking, *Project Location* Syracuse, New York
Coordinated and inspected remedial activities following the discovery of free-floating products and impacted soils during the removal of three USTs Remedial activities included removing free-floating products, excavating visually impacted soils, and installing three monitoring wells for long-term groundwater monitoring

Develop Design Plans and Specifications
Project Client Chicago Pneumatic Corporation, *Project Location* Utica, New York
Developed design plans and specifications for the installation of one 8,000-gallon AST system to store hazardous waste liquids The tank system was designed to be constructed within an existing building Various associated appurtenances included an overfill detection alarm system, level gauge system, and steel diked secondary containment system

Storm Sewer Investigation Activities
Project Client General Motors Corporation, *Project Location* Flint, Michigan
Developed and managed the performance of storm sewer investigation activities that included performing site reconnaissance activities, including the development of a storm sewer manhole identification system and visual inspection of more than 230 of the major automobile manufacturer facility's more than 1,000 storm sewer manholes The initial site reconnaissance activities were then used to develop and perform subsequent storm sewer sediment sampling,

storm sewer cleaning, and storm sewer video inspection activities Storm sewer sediment samples were collected from 22 manhole locations to characterize sediments for disposal upon completing sewer-cleaning activities Storm sewer cleaning activities included the removal and disposal of approximately 26 cubic yards of sediment from 2,550 linear feet of storm sewer pipeline Video inspection activities included inspecting approximately 17,000 linear feet of the facility's 120,000 linear feet of storm sewer pipeline within seven of the facility's 16 storm sewer outfalls Additional storm sewer evaluation activities included the placement of absorbent booms and visual inspection of storm- and non-storm-related flow; estimating stormwater velocity, flow, and physical parameters (e g , pH, conductivity, temperature); and collecting and analyzing stormwater during production and nonproduction periods from within several (up to 36) manhole locations from three of the facility's 16 outfalls

Engineering Evaluation/Cost Analysis (EE/CA)
Project Client PRP Group, *Project Location* Manistique, Michigan
At a Superfund site on Michigan's Upper Peninsula, participated in the development of an EE/CA for remedial alternatives associated with the cleanup of PCB-impacted sediment The site consists of approximately 1 4 miles of river and harbor area that discharge into Lake Michigan The EE/CA was developed to evaluate response alternatives addressing the environmental concerns at the site The EE/CA described the site background, identified objectives and potential ARARS, developed alternatives, evaluated alternatives (including cost analysis), provided for public participation, and recommended an appropriate action for the site

Oversight of Free-Floating Product Recovery System Construction
Project Client General Motors Corporation, *Project Location* Flint, Michigan
Construction coordination activities included procuring and providing oversight for construction activities using outside subcontractors and client union labor Additional activities included facilitating the off-site disposal of contaminated soils via railcar, including the characterization of soils for disposal, manifesting, and railcar access

Waste Handling Plan, Sampling and Analysis Plan, and IRM Report
Project Client General Motors Corporation, *Project Location* Massena, New York
Coauthored a work and waste handling plan, sampling and analysis plan, and interim remedial measure report for a minerals processing plant The work and waste handling plan provided details for implementing interim remedial measures (IRMs) to be performed in accordance with a NYSDEC Administrative Order on Consent The work and waste handling plan detailed IRM activities that included an air-monitoring program, site access control; stormwater management controls, site characterization, soil excavation and backfill, building decontamination, including asbestos removal and PCB decontamination, building demolition, and site grading The sampling and analysis plan was developed to provide specific sampling and analysis procedures for specific IRM activities, including soil disposal, pre- and post-construction soil sampling, air monitoring, and confirmatory sampling associated with building decontamination activities